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Pulsed laser deposition assisted growth of alkali-based photocathodes

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Alkali-based semiconductor photocathodes are widely used as electron sources and photon detectors. The properties of alkali-based semiconductor materials such as crystallinity and surface roughness fundamentally determine the performance merits like quantum efficiency and thermal emittance. In BNL, pulsed laser deposition (PLD) was utilized to assist the growth of alkali-based photocathode materials, providing precise control of material growth and improving film quality. In the presented work, films prepared with thermal and PLD sources are compared. The film quality of K₂CsSb, Cs₃Sb and Cs₂Te grown with PLD assisted technique are reported.

Footnotes

[1] C. T. Parzyck, A. Galdi, J.K. Nangoi, W.J.I. DeBenedetti, J. Balajka, B.D. Faeth, H. Paik, C. Hu, T.A. Arias, M.A. Hines, D.G. Schlom, K.M. Shen, and J.M. Maxson, Phys. Rev. Lett. 128, 114801 –Published 18 March 2022

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